RECEIVED
CENTRAL FAX CENTER
JUL 13 2005

S/N 10/681893 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	HAMAMOTO et al.	Examiner:	R. MANCHO
Serial No.:	10/681893	Group Art Unit:	3663
Filed:	OCTOBER 9, 2003	Docket:	13425.43US01
Title:	CONTROL APPARATUS FOR AN ELECTRIC POWER STEERING SYSTEM		

CERTIFICATE UNDER 37 CFR 1.6(d):
I hereby certify that this paper is being transmitted by facsimile to the U.S. Patent and Trademark Office on July 13, 2005.

By:
Name: James A. Larson

RESPONSE

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

In response to the Official action mailed May 20, 2005, Applicants respond as follows.

Reconsideration and reexamination are requested in view of the following remarks. Claims 1-3 are pending.

Applicants note that an Information Disclosure Statement was filed on June 24, 2005. Applicants request consideration of that information and return of the initialed copy of Form 1449 with the next official communication.

Claims 1-3 are rejected under 35 USC 102(b) as being anticipated by U.S. 5,844,387 to Mukai et al. (hereinafter "Mukai").

In addition, claims 1-3 are rejected under 35 USC 102(b) as being anticipated by JP 08-332969 to Mukai et al. (hereinafter "JP '969").

Applicants respectfully traverse each of these rejections and reconsideration is requested.

Mukai does not teach each and every feature recited in claims 1 and 3. Therefore, Mukai does not anticipate claims 1 and 3.

In particular, Mukai does not disclose a "gain adjustor for adjusting the gain according to a differential of the steering torque signal" as recited in claim 1. In addition, Mukai does not disclose a "deviation adjustor for adjusting the deviation with a variable gain according to the vehicle velocity signal" as recited in claim 1.

Further, with respect to claim 3, Mukai does not disclose "adjusting the gain according to a differential of the steering torque signal" and "adjusting the deviation with a variable gain according to the vehicle velocity signal".

The rejection asserts that Mukai teaches a deviation adjustor at column 2, lines 56-64 and a gain adjustor at column 2, line 65 to column 3, line 9. Applicants submit that these passages of Mukai have been misinterpreted.

Firstly, it is noted that Mukai does not refer anywhere to a variable gain, or to adjusting the gain according to a differential of the steering torque. As noted by the Examiner, Mukai does refer to bringing the deviation signal ΔI to zero at column 2, lines 56-64. Similar language is found at column 2, line 65 to column 3, line 9. However, what these passages refer to is that the drive control unit 17 receives the deviation signal ΔI, outputs the motor control signal V_0 to the motor drive unit 13 which then adjusts the motor voltage V_M. This adjustment of the motor voltage V_M is detected by the motor current detecting unit 14 which ultimately feeds the motor current signal I_{MO} to the deviation determining unit 16. Therefore, assuming a deviation ΔI is initially detected, the drive control unit 17 and the motor drive unit 13 act to bring the deviation ΔI back to zero by adjusting the motor.

These passages in Mukai describe the concept of operation of a standard control system for controlling an electric power steering system (see page 1, lines 9-18 of Applicant's specification). This standard control in Mukai does not utilize or even relate to a variable gain as claimed, or to a gain adjuster for adjusting the gain as claimed. As disclosed by Applicant's, the attenuator 23 is able to adjust the deviation ΔI with a varying gain K according to the vehicle velocity signal (see, e.g., page 10, lines 14-15).

Even assuming that column 2, lines 56-64 of Mukai discloses a deviation adjuster for adjusting the deviation with a variable gain as claimed, which Applicants do not concede as discussed above, there is no "gain" discussed in column 2, lines 56-64 that is adjusted by a "gain adjuster" or by any feature discussed at column 2, line 65 to column 3, line 9. That is because column 2, lines 56-64 and column 2, line 65 to column 3, line 9 are describing essentially the same function of the Mukai control system, with one passage describing when there is a right turn and the other passage describing when there is a left turn. As a result, these passage are not describing different features as claimed (i.e. a deviation adjuster and a gain adjuster) and are not describing separate control steps as claimed (i.e. adjusting the deviation with a variable gain and adjusting the gain).

Further, Mukai does not disclose adjusting gain according to a differential of the steering torque signal as claimed. Although Mukai discloses the use of a torque signal in his control process, Mukai does not disclose the use of a differential of the steering torque signal. Mukai utilizes the actual measured torque signal at any point in time (see Figure 5 of Mukai). Mukai does not create or use a differential ΔT of the torque signal, which is discussed by Applicants at, for example, page 10, lines 15-17.

Likewise, JP '969 does not teach each and every feature recited in claims 1 and 3. Therefore, JP '969 does not anticipate claims 1 and 3. In particular, JP '969 does not disclose a "gain adjustor for adjusting the gain according to a differential of the steering torque signal", as recited in claim 1. In addition, Mukai does not disclose "adjusting the gain according to a differential of the steering torque signal", as recited in claim 3.

JP '969 discloses a control system for an electric power steering system. The system includes a PI control section 23 that creates an IPI signal that is fed to a control signal generating means 27 (see Figure 2; paragraphs [0040-0041] of the English language translation filed on October 9, 2003). A PI coefficient setting means 28 directs a proportionality coefficient KVP and an integration coefficient KVI which are multiplied with the proportional sensitivity KP and the integration gain KI (paragraphs [0042-0044] of the English translation). As shown in Figure 2, the velocity signal Vs is fed to the target current setting means 21 and the PI coefficient setting means 28, while the torque signal Ts is fed only to the target current setting means 21.

JP '969 does not disclose a gain adjuster for adjusting the gain according to a differential of the steering torque signal as recited in claim 1. Further, JP '969 does not disclose adjusting the gain according to a differential of the steering torque signal as recited in claim 3. The gain in JP '969 is not adjusted according to a differential of the steering torque signal. The torque signal Ts in JP '969 is fed only the target current setting means 21. There is no other disclosed use of the torque signal, and no differential of the torque signal is determined. Therefore, JP '969 does disclose a gain adjuster or adjusting the gain as claimed.

For at least these reasons, claims 1 and 3 are patentable over Mukai and JP '969. Claim 2 depends from claim 1 and is patentable along with claim 1 and need not be separately distinguished. Applicants do not concede the rejection to claim 2 and reserve the right to file arguments at a later date specifically addressing claim 2.

In view of the above, Applicants believe that the claims are allowable. Favorable reconsideration in the form of a Notice of Allowance is requested. Any questions or concerns regarding this communication can be directed to the undersigned attorney at (612) 455-3800.

Respectfully Submitted,

Dated: July 13, 2005

Curtis B. Hamre

Curtis B. Hamre
Reg. No.: 29,165
Hamre, Schumann, Mueller & Larson, P.C.
225 South Sixth Street
Suite 2650
Minneapolis, MN 55402
612.455.3800
CBH/JAL